Evolution of Short-term International Service-learning Class in Quito, Ecuador

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Alan Bugg recently joined the faculty of the McWhorter School of Building Science at Auburn University as an assistant professor. Prior to joining the faculty at Auburn, he worked for the U.S Army Corps of Engineers in a variety of positions for over 33 years. Most recently, he served as the Area Engineer at Fort Benning, Georgia where he directed a staff of 40 engineers and technicians and was responsible for the execution of a construction program averaging $200 million per year. Mr. Bugg earned a bachelor’s degree in agricultural engineering in 1983, a master’s degree in Business Administration in 2003, and a master’s degree in Building Construction in 2011, all from Auburn University. Mr. Bugg is a registered Professional Engineer in the State of Alabama, a certified Project Management Professional (PMP), a certified DBIA Design-Build Professional, and a Certified Professional in Erosion and Sediment Control (CPESC).

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Scott W. Kramer, Ph.D. is a Professor in the College of Architecture, Design, and Construction at Auburn University. He received his B.S. and M.S. in Civil Engineering from Auburn University and Ph.D. in Learning Design & Technology from Purdue University. Since 1993, he has taught undergraduate and graduate classes in scheduling, project management, and information technology. His research and consulting work involves international construction and designing study abroad classes for university students. His project management experience includes 9 years of professional practice working for two Engineering News Record (ENR) top 50 commercial builders. Kramer co-authored the research article, Teaching Project Management Through an Information Technology-Based Method, which was named the 1997 Paper of The Year by the PMI Project Management Journal. Kramer has also received several national teaching awards including the Associated Schools of Construction National Teaching Award (1996) and the Outstanding Educator Award (2003). In 2013, Kramer received the McWhorter School of Building Science Faculty Excellence Award for Leadership in Study Abroad classes.
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ABSTRACT
Many study abroad classes typically provide opportunities for students to travel and learn about different cultures in developed countries. The overwhelming majority of American students study abroad in Western Europe and Australia. However, the cost, duration and timing of these classes, often prevent some students from being able to participate during their undergraduate education. In order to help alleviate these common barriers, two faculty members at Auburn University designed and implemented a 10-day Service-Learning class to Quito, Ecuador. An international Service-Learning class is defined as: "A structured academic experience in another country in which students (a) participate in an organized service activity that addresses identified community needs; (b) learn from direct interaction and cross-cultural dialogue with others; and (c) reflect on the experience in such a way as to gain a deeper appreciation of the host country and, an enhanced sense of their own responsibilities as citizens, locally and globally" (Bringle et al 2011). The class was designed to appeal to students who would not have otherwise considered studying abroad. In order to minimize the cost and curriculum disruption, the program fee was limited to $2,500 and the 10 days coincided with the students’ academic spring break. Academic credit was not offered in the 2010 initial class, but since 2012 – 2017, the class has been offered as a construction elective within the Building Science curriculum. The students and faculty typically work with a community construction project, usually an after school care center for 200-350 underprivileged children, consisting of a 4-story, 30,000-sf concrete framed building. Students are given the opportunity to work on an Ecuadorian construction site using rudimentary tools and methods in order to serve an underprivileged population. This paper describes the design, implementation and evolution of this International Service-Learning class and international experience offered in the construction management curriculum.

Key Words: service-learning, construction, study-abroad

Introduction
A typical mission of construction management programs in the United States is to equip graduates with the tools and skills necessary to effectively manage construction projects. The mission is accomplished by providing instruction in areas such as estimating, scheduling, safety, construction law, construction business, building information modeling, project management, and structures, focusing on the technical aspects of construction management. In general, this curriculum focuses only on practices necessary to successfully complete projects in the United States. In today’s global economy, of which construction plays a large part, it is greatly beneficial for students to be acquainted with foreign cultures and construction techniques. This exposure provides students with critical information essential for a well-rounded educational experience, and in turn, preparing them for a wide range of employment opportunities abroad (Farrow et al 2011).
This paper describes a short-term service-learning program in Quito, Ecuador completed by faculty and students in the McWhorter School of Building Science at Auburn University. A short literature review is provided describing the value of service learning and study abroad programs in higher education, and previous studies into international service learning in the realm of construction management. The paper concludes with a detailed description of the program, and student takeaways from their involvement.

**Literature Review**

**Service Learning**

Progressive service learning (i.e., learning and developing through active participation) provides an enhanced learning environment for students, as opposed to traditional learning methods that are mostly theoretical in nature, not realistic in application, and do not connect the various aspects of a field of study (Burr, 2001). Astin et al (2000) describes a longitudinal study of over 22,000 undergraduate students in the United States, with the stated goals of (1) exploring the comparative effects of service learning and on the cognitive and affective development of college undergraduates, and (2) enhance the understanding of how learning is enriched by service. The study found that the single most important factor associated with a positive service learning experience is the student’s degree of interest in the subject matter, how the experience enhances the understanding of *academic* course materials, and if the service is viewed as a learning experience.

Batie (2007) describes a service learning course completed at East Carolina University with the purpose of allowing “students to experience the realities of renovation construction in concert with community interaction and thus grow through the service option.” The course revolved around the complete renovation of an existing residential structure in the “West End” of Greenville, North Carolina, and long depressed area of the city that was in the midst of a community revitalization. Student commentary as to the value of the course was positive, with statements such as “a class that integrated the text and reality” and “I think it was one of the best classes that a construction management student could take. I learned so much from the experience.” Moreover, all of the students involved desired that an on-going service learning course be offered in the future.

Barlow (2009) describes the development of an undergraduate construction management course at California Polytechnic State University that was designed to incorporate service learning goals and objectives into a hands-on construction experience. Students were tasked with completing various small renovation projects in their local community, which included the full spectrum of construction management responsibilities, including safety planning and assurance, client relations, project scope development, estimating, scheduling, project tracking and documentation, construction execution, and project closeout. Post-completion student surveys highlighted the success of the course, with comments such as “It was a great feeling to apply previous class materials while at the same time helping families in need.”
The opportunity for students to “study abroad” is a staple of almost every American university, with studies showing the ability of such an experience to effect personal growth and career goals. Chieffo and Griffiths (2004) surveyed over 2,300 students at the University of Delaware that had participated in short-term (i.e., five week long) study abroad programs, and found that students perceived these endeavors as worthwhile to their intellectual and personal lives. Norris and Gillespie (2008) describe a study in which over 3,700 alumni of study abroad programs completed between the years of 1950 to 1999 were surveyed in regards to how study abroad effected their career paths. Results of the survey showed that the “experience enabled a majority of respondents to gain skills that influenced their career path, foreign language ability that they used at work, and interest in a career direction that they pursued.”

The opportunity to study abroad was largely absent from most undergraduate construction management programs of study, until relatively recently (Lu, Connell, Wang, 2009). Moreover, very few constructions students are exposed to foreign building practices, through either classroom instruction or tactile engagement (Farrow et al. 2011). Farrow and Kramer (2009) details the integration of aspects of a service learning project into construction management coursework. Junior and senior students were required to complete site-specific safety plans and construction schedules for a proposed international service project in Quesimpuco, Bolivia. A survey of the students involved showed that being involved in preparation for a real-world project in a service-oriented environment excited the students, and that they embraced the concept of short-term, international study abroad project as part of their undergraduate curriculum.

Initial Short Term, International Service Learning Program to Quito, Ecuador

Farrow et al (2011) describes a short term (i.e., eight-day), international study abroad program conducted in Calderon, a growing suburb of Quito, Ecuador, in the spring of 2010. The project consisted of leveraging local practices and practitioners on the construction of Dulce Refugio (sweet refuge), a 4-story, 30,000 sf school and after school care center for 300 underprivileged children. Amenities include classrooms, a kitchen for preparing students’ meals, and administrative offices.

The trip was taken in conjunction with faculty and students from the Auburn University School of Nursing, who conducted a women’s health clinic in Quito. The trip was limited to eight days in order to eliminate the barriers of excessive travel costs (i.e., $1,800 total cost to students), and to limit the disruption for students’ study or work plans for the summer. The trip was coordinated through Servants in Faith and Appropriate Technology (SIFAT). SIFAT is a faith-based, non-profit organization, headquartered in Lineville, Alabama. SIFAT’s mission is to provide training in community development in underdeveloped countries, and have worked in Ecuador since 2000. The organization encourages long-term development, not short-term relief. SIFAT’s philosophy rejects activities that create dependency. Rather, the organization favors activities that develop self-sufficiency in the communities where they work. By using this approach,
SIFAT cultivates a culture of cooperation and collaboration. As stated on their website, “SIFAT does not do things for people, but with people” (SIFAT 2017).

A survey of the students involved with the program showed that the humanitarian aspect of being involved in such a program was the biggest impetus, along with gaining educational value and international experience. The authors also noted that coupling service learning abroad with local cultural engagement enhances student’s total benefit received from such an excursion (Farrow et al 2011).

**Current Engagement by Auburn University**

In any given calendar year, about 20 groups from various organizations travel to Ecuador to work on Dulce Refúgio. SIFAT coordinates the rotation of the groups while an Ecuadorian engineer supervises the construction of the project. Currently, the first three floors of Dulce Refúgio are in use by the students and faculty of the center; however, the fourth floor is still under construction.

Since 2012, the McWhorter School of Building Science has made available the opportunity for undergraduate and graduate students to participate in short term, international study abroad to Quito through an elective course. The elective course is offered in both the fall and spring semesters. To date, approximately 100 undergraduate and graduate students have participated in work on Dulce Refúgio.

The trip itinerary has evolved and been standardized in order to minimize logistical planning, as the study abroad trip leaders have become more familiar with the educational opportunities available outside of the project itself. The total duration of the trip has been expanded to 10 calendars days. Table 1 provides the standard itinerary used for each trip to Quito. The group normally arrives in Quito very late on Friday night, as shown in Table 1. The first two full days in the country are spent on cultural and historic tours of the Quito area. This approach gives the students exposure to the sites and culture of Ecuador, while at the same time allowing the participants to acclimate to the high altitude (i.e., 9,500 feet above mean sea level). On Saturday morning, the group boards the Teleferico, a gondola that travels to the top of one of the mountain peaks surrounding Quito. The top of the mountain is approximately 13,000 feet above mean sea level, and offers amazing views of Quito and the surrounding countryside. A short hike at the top of the mountain aids in the acclimation process. The hike is followed by an historic architecture tour of the city that includes a visit to the Basilica del Voto Nacional, the El Panecillo (a 150 ft tall aluminum statue of the Madonna) and several other historic buildings. On the following day, the group travels to the equator and visits both the official and actual location of the *Center of the World.*
The students participating in the trip work along-side local engineers and craftspeople to construct the building using local constructions techniques that would be considered rudimentary by U.S. standards. However, by using local building techniques, the students gain an appreciation of the challenges faced by builders in underdeveloped countries. This approach has the added benefit of allowing work to progress on the project in the absence of U.S. construction teams. Tasks normally performed with the help of mechanical equipment were completed using manual labor. For example, all the construction material has to be carried up three flights of stairs to the fourth floor, due to the lack of a crane or other lifting equipment. Construction materials include cement, sand, concrete aggregate, reinforcing steel, formwork, and concrete masonry units (CMUs). Students mix all the concrete for the stairs and columns and the mortar for the CMUs by hand using shovels. The students bend the reinforcing steel for the columns by hand. Students have to patch together the formwork that had been reused numerous times for the columns and stairs.

Figure 1 shows some of the construction techniques used by the students to advance the construction of Dulce Refúgio. The lack of proper tools and equipment forces the students to improvise in order to complete each task. By the end of the day, they all have an appreciation for the physical labor required to construct a project in an underdeveloped country.
The construction phase of the class is completed on late Thursday afternoon. The group spends one last night in Quito prior to travelling to the countryside and staying in an historic hacienda. The group hikes around Lagos de Mojando, a lake formed when a volcano erupted and collapsed.
in on itself. Prior to going to the airport, for the return flight home, the group visits Otavalo, the largest indigenous craft market in the western hemisphere.

In addition to the construction work and cultural tours, on recent trips the students have been encouraged to interact with the schoolchildren and the community as a whole. This interaction included visiting some of the students in their homes; sitting in on classes; playing soccer at the end of the workday with the students; participating in a senior citizen exercise class; and assisting the cooks at the school prepare meals. These activities were not construction related. However, performing these tasks and interacting with the community certainly reinforced the service-learning and cultural aspects of the trip. Figure 2 shows photographs of the cultural and community outreach activities.

Students are required to write a reflection paper detailing their assessment of the trip and its value as a learning experience upon returning home after the trip. The following are the recurring themes in these reflection papers:

1. The most common recurring theme was the fulfillment the students’ experience by performing service for and helping others. Most of the students stated that the trip had motivated them to return to Ecuador, and to visit other underdeveloped countries in the future to use their skills and knowledge to improve conditions in these countries. They stated that it gave them a greater appreciation for what it means to be a citizen of the world and their responsibility to use their gifts to make the world a better place.

2. The students gained an appreciation for the challenges faced by constructors in underdeveloped nations. They gained an appreciation for the skill, craftsmanship and ingenuity of the local tradesmen during the short duration of the construction project.

3. The richness of local culture and the resiliency of the Ecuadorian people impressed all of the students making the trip.
Conclusion

Due to the short duration of the trip, the primary value of the experience is derived from exposing the students to interactions with another culture and the challenges faced in developing countries. While the students do learn new technical skills by using construction techniques
utilized by local craftspeople, greater value is derived from having them reflect on their responsibilities as global citizens and teaching them the importance of using their skills to make the world a better place. This conclusion has been reached based on discussions with the students after the completion of the trip. The short duration of the service learning trip made studying abroad accessible to a group of students who would not otherwise been able to do so. The service learning program has also been successful by making students consider expanding their horizons to overseas study and employment. The overwhelming majority of the participants report a positive experience to the point that many are considering participating in expanded study abroad trips and possible working outside the United States upon graduation.

Auburn University’s service learning program to Ecuador has proven to be successful and sustainable over the long-term. Since 2011, Building Science has taken 10 service learning trips to Ecuador. The plan is continue these trips during the fall and spring semesters for the foreseeable future. This program could easily be adopted by other universities interested in started or expanding service learning programs. Key lessons learned to date include the following:

- It is essential to collaborate with an organization that has local contacts to assist with project logistics, planning, communication and coordination with local craftspeople.
- Keeping cost low and limiting the duration of the trip makes the service learning experience accessible to a larger number of students.
- Ensure that students have ample time to experience the local culture and interact with the local community.
- Select a project that can be joint effort between the students and the local community that fosters a relationship of coordination, not a relationship of dependency.

The Ecuador program has been so successful; the McWhorter School of Building Science is in the planning stages of going beyond Ecuador and establishing classes for service learning trips to Panama, Haiti and Africa. The logistics of these classes will be challenging, but the lessons learned in Quito over the past seven years will be invaluable. In addition, future research is planned for not only documenting the logistics and planning of service learning classes in Quito, but to acquire qualitative and quantitative data on the students’ experiences, perceptions, cultural awareness, and confidence of working outside their normal geographical boundaries.

References


